THE EFFECTS OF YEARS IN SCHOOL, SEX, AND PRE-PRIMARY EDUCATIONAL EXPERIENCE ON THE CREATIVITY OF YOUNG APPALACHIAN CHILDREN

A Thesis

by

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ABSTRACT

THE EFFECTS OF YEARS IN SCHOOL, SEX, AND PRE-PRIMARY EDUCATIONAL EXPERIENCE ON THE CREATIVITY OF YOUNG APPALACHIAN CHILDREN

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The purpose of the research was to assess the creative abilities of children from rural Appalachia, and to examine the effects on creativity of years in public school, pre-primary educational experience, and sex of the subjects. The 95 subjects were students in kindergarten, first grade, or second grade enrolled in rural public schools in a mountain county in northwestern North Carolina. Subjects were grouped according to grade in public school and according to age.

The instruments used were Thinking Creatively With Pictures, Figural Form B (TTCT, Figural Form B) and Thinking Creatively in Action and Movement (TCAM), designed by E. Paul Torrance. Hypotheses concerning the following issues were tested:

1. There would be no correlation between scores on the two assessments;

2. There would be no significant differences in scores on the two assessments based upon age, sex, grade in public school, or pre-primary educational experience; and

3. Subjects' scores would not vary significantly from norm group scores on the two assessments.

A Pearson correlational analysis was used to determine if correlations existed between the two instruments. Of the 32 correlations between TTCT, Figural Form B and TCAM variables, 18 were significant, and the strongest correlation existed between the total scores.

Pearson correlation coefficients were obtained to determine the relationship of age and of grade level to TTCT, Figural Form B and TCAM variables. Both age and grade in public school were found to correlate with variables on TTCT, Figural Form B, but neither of those factors correlated with TCAM variables.

The TTCT, Figural Form B and the TCAM assessments were analyzed for sex differences and for pre-primary educational experience differences using difference of means tests with two-tailed t-tests for significance. No significant differences were found to exist based on sex or pre-primary educational experience.

To determine the significance of difference between subjects' scores and norm group scores on TTCT, Figural Form B and TCAM, difference of means tests, with z-tests for significance, were used. There were significant differences between sample scores and norm group scores on both instruments, with sample scores consistently below norm group scores.

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I also wish to acknowledge the willing contributions made by the members of my thesis committee, Drs. Joyce V. Lawrence and Mae Reck.

I am indebted to Dr. E. Paul Torrance for his assistance in training me to administer and score the instruments used in this research, and for supplying the needed copies of the otherwise unavailable instrument.

Finally, I wish to thank my typist, Diana Ward, for her patience as well as for her professional skills.

DEDICATION

I gratefully dedicate this thesis to my family, Mr. and Mrs. Herbert M. Brett and Dr. Sue M. Brett, whose unending love, support, and encouragement have made this achievement possible.

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CHAPTER I

THE PROBLEM

Statement of the Problem

The concept of the creativity of young Appalachian children exists as a sort of paradox. On the one hand, it has long been held that the Appalachian subculture of poverty has produced among its young citizenry a deprived multitude lacking in cognitive, social, and psychomotor skills (Looff, 1971); deficient in intellectual functioning (Lewis, 1946; Looff, 1971); inadequate in language development (Lewis, 1946); and possessing generally low self-concepts (Reck, 1980). It seems logical to infer, then, that the creative abilities of Appalachian children will follow suit and likewise be less in evidence than the creative functioning of mainstream American children.

On the other hand, that same subculture, defined by Weller as "the mountaineer's way of organizing his existence, his way of looking at things, the basic direction of his thinking" (Weller, 1965, p. 35), might be viewed as the creative processing of divergent information. Indeed, Torrance has identified what he terms "creative positives" of disadvantaged, culturally different children. Referring to lower class black children, he writes that "in many ways, the life

experiences of disadvantaged children prepare them for creative achievement" (Torrance, 1971, p. 79). The rural Appalachian lifestyle may have a similar effect on the creative functioning of the young.

Observations seem to show that young children are free and imaginative in unstructured play, but that as they grow older, they tend to lose that spontaneity and imagination to more stereotyped, stifled behavior (Andrews, 1930; Torrance, 1962). An empirical study by Andrews in 1930 implicated the educational setting, at least in part, for "a sudden drop at the age of five when children usually enter kindergarten" (Keily, 1974, p. 19) of scores on total imaginative functioning.

It is the purpose of this research, then, to extend the study of creativity as exhibited by other "disadvantaged" children to include an assessment of creative abilities of children from rural Appalachia. Further, research into the effects on creativity of years in public school, pre-primary educational experience, and sex will be conducted, using the special population of rural Appalachian children for the basis of study.

Hypotheses

It is the purpose of this research to extend the study of creativity to include an assessment of creative abilities of young children from rural Appalachia. In addition, the effects on creativity of years in public school, pre-primary educational experience, and sex will be studied.

The hypotheses will be as follows:

1. There will be no significant correlation between the subjects' scores on Thinking Creatively With Pictures, Figural Form B, and Thinking Creatively in Action and Movement, with age partialled out.
2. There will be no significant difference based upon the age in months of subjects on scores on Thinking Creatively With Pictures, Figural Form B.
3. There will be no significant difference based upon the age in months of subjects on scores on Thinking Creatively in Action and Movement.
4. There will be no significant difference based upon sex on scores on Thinking Creatively With Pictures, Figural Form B.
5. There will be no significant difference based upon sex on scores on Thinking Creatively in Action and Movement.
6. There will be no significant difference, based upon pre-primary educational experience, on scores on Thinking Creatively With Pictures, Figural Form B.
7. There will be no significant difference, based upon pre-primary educational experience, on scores on Thinking Creatively in Action and Movement.

8. There will be no significant difference based upon subjects' grade level in public school on scores on Thinking Creatively With Pictures, Figural Form B.
9. There will be no significant difference based upon subjects' grade level in public school on scores on Thinking Creatively in Action and Movement.
10. There will be no significant difference between subjects' scores and norm group scores on Thinking Creatively With Pictures, Figural Form B.
11. There will be no significant difference between subjects' scores and norm group scores on Thinking Creatively in Action and Movement.

Definition of Terms

Appalachian children. Appalachian children are those children born in an Appalachian county, as defined by the Appalachian Regional Commission, and who are enrolled in a public elementary school in a rural setting.

Creativity. As defined by Torrance (1966), creativity is:

> a process of becoming sensitive to problems, deficiencies, gaps in knowledge, missing elements, disharmonies, and so on; identifying the difficulty; formulating hypotheses about the deficiencies; testing and retesting these hypotheses and possibly modifying and re-testing them; and finally communicating the results. (p. 6)

Pre-primary educational experience. A pre-primary educational experience is any group care experience prior to kindergarten, including day care, nursery school, or pre-school settings, which a child has attended regularly over a period of six (6) months or more.

Limitations of the Study

1. The conclusions of the study are limited by the restricted population and thus may only be generalized to similarly defined populations.

2. Since the definitions of creativity vary among theorists, for the purposes of this study, the definition of creativity must be strictly limited to that set forth by Torrance.

3. The assessment of creativity in young Appalachian children is limited by the specific tests used.

4. The statistical significance of the results is restricted by the limited sample size.

CHAPTER II

THEORETICAL BACKGROUND FOR THE STUDY

Exploration of the Appalachian "subculture of poverty " as creative advantage or disadvantage

A pioneer work in studying the personalities and behaviors of young Appalachian children is Claudia Lewis' Children of the Cumberland, published in 1946. Lewis based her study on observations made on a group of mountaineer children whom she was called upon to teach, and she compared and contrasted that sample with one of children from New York City, whom she had also taught. Lewis attended to the concept of creativity, writing that "we have seen that Cumberland mountain children can develop some of the same kind of creative originality" that distinguishes children from the urban North (Lewis, 1946, p. 53).

As has been noted previously, Appalachia is often considered a subculture of poverty, inadequacies, and backwardness. From such a postulate, one could infer that Appalachian children are disadvantaged in terms of social, intellectual, emotional, and creative functioning. Looff (1971) studied in depth what he considered the stifled developmental processes of Appalachian children. He found that "the problems begin

long before children reach school age" (Looff, 1971, p. x). His sample of pathologically impaired children referred for mental services leaves much to be desired, however, and the author feels that one must look beyond such case studies to obtain a fair view of Appalachian personalities and potentialities.

Review of the literature related to creativity and factors of cultural differences, educational setting, grade level, sex, and pre-primary educational experience

While Lewis was immediately and continuously stricken by the differences between mountain children and children from the urban North, other educators, such as E. Paul Torrance, have moved beyond this dichotomous position to ascertain what cultural differences may mean for the field of education. "Differences are not deficits" writes Torrance, so stating that cultural differences may be "positives" rather than deterrents to creative functioning (Torrance, 1974, p. 471). After several years of research and study, Torrance feels secure in asserting that "with adequate and appropriate motivation culturally different children, even disadvantaged ones, will manifest as much gifted behavior as their more affluent peers" (Torrance, 1974, p. 479).

Another study, conducted by Richmond in 1973, compared the creative productivity of 116 disadvantaged elementary school pupils with advantaged norm groups. He used a sample population from a Southeastern metropolitan area, and the students, who ranged from grades four through seven, were

96% black. Richmond's results indicated that disadvantaged children high in developmental age are more likely to score higher on verbal creativity tasks and on the Figural Fluency and Figural Originality tasks of the Torrance Tests of Creative Thinking (Richmond, 1973).

In research which supports Torrance's hypothesis that differences are not necessarily deficits, Rogers (1968) identified visual expression as a creative advantage of the disadvantaged. Rogers evaluated 125 children, randomly selected from a total of approximately 1900 and enrolled in the fifth and sixth grades in the public schools of Norwalk, Connecticut, on drawing ability, originality and fluency, and aesthetic judgment. The children were classified as advantaged or disadvantaged based upon family income, education of parents, occupational status of parents, and geographical residence. For purposes of this study, three groups of disadvantaged pupils and two groups of advantaged students were organized, and all subjects were administered three pre-tests. The first test was designed specifically for the study to measure drawing ability. The second test, the Figural Battery of the Torrance Tests of Creative Thinking, was used to measure visual originality and visual fluency. The third test was the Meier Art Judgment Test, designed to measure discrimination between good and bad composition.

Drawings from the first test were mixed so that they were not identifiable to the three art educators who judged the drawings on a ten-point scale developed for the study.

When the mean test scores for fifty disadvantaged children and fifty advantaged children were compared, the advantaged students were found to be superior to the disadvantaged students. After a brief instructional period, however, there were no significant differences between advantaged and disadvantaged children in terms of drawing ability.

Despite the handicap of poorer initial drawing ability, the disadvantaged children were significantly superior to the advantaged children in the number of ideas they visualized and drew on the Figural Fluency measure of the Torrance Tests of Creative Thinking. The ideas produced by the disadvantaged children on the Figural Originality measure of the Torrance Tests of Creative Thinking were slightly more original than those ideas produced by the advantaged children, but not significantly so.

Results of the Meier Art Judgment Test showed that the advantaged and disadvantaged children were similar in their ability to discriminate between good and bad composition (Rogers, 1968).

In a comparative analytical study of creative and intelligent behavior of elementary school children, Solomon (1968) found that the relationships between socio-economic status and creativity do not follow a consistent pattern. In some instances, the advantaged children are favored and in others, the deprived children excel. Solomon chose 722 first, third, and fifth grade children from District of Columbia elementary schools of varying socio-economic backgrounds for

her study. Children of both sexes in each of the three grades were tested for verbal intelligence, as measured by the Peabody Picture Vocabulary Test, and for creativity, as measured by the Torrance Tests of Creative Thinking, Figural Form B and Verbal Form A. The Torrance test scores had the greatest relationship to the combined variables of sex, intelligence, and socio-economic status at the earliest years of school. Scores were totally unrelated to intelligence test scores, as measured by the Peabody Picture Vocabulary Test (Solomon, 1968). Solomon has more recently expanded her dissertation research and in so doing has revised her earlier analyses. Her later analysis indicates clearly that "disadvantaged children have a margin of success over advantaged children in many areas of creative thinking in the early years of school" (Solomon, 1974, p. 293).

During the early stages of development of the Torrance Tests of Creative Thinking (TTCT), experimentation indicated that "economically deprived, black, and other minority culture children seemed to perform as well as children from any other group" (Torrance, 1971, p. 75). Torrance assures fellow researchers that "some of our most outstanding performers from the very beginning were children from definitely disadvantaged backgrounds" (Torrance, 1971, p. 75).

In addition to the empirical studies which point to the superiority of the socio-economically disadvantaged children on measures of creativity, there is evidence that the experiences offered by life in a rural environment also

contribute to the growth of creative thinking abilities. Westra studied the creative thinking of pre-kindergarten children from two preschool settings, one located on a farm with a curriculum based on farm experiences and resources, and the other located in an urban area with a more traditional curriculum. Results showed that the pre-kindergartners in the two schools differed significantly in creative thinking ability, as measured by Torrance's Thinking Creatively in Action and Movement test, with children from the farm-based preschool having the higher scores (Westra, 1978).

Williams, Teubner, and Harlow explored the creativity of urban, rural, and Indian children, with their 237 subjects defined and divided into the following groups: urban middle class, urban lower class, rural, Indian lower class, and Indian impoverished. The rural group scored highest on all three measures of verbal creativity, though no significant differences were found for figural creativity (Williams, Teubner, & Harlow, 1973). According to the authors, the data presented "imply that rural children do not suffer the deficit in creativity" which has been suggested in earlier research (Williams, Teubner, & Harlow, 1973, p. 115).

One conclusion expounded by Savoca (1965), following research into the effects of reward, race, IQ, and socio-economic status on the creative production of preschool children, is that cultural deprivation has a negative effect on the divergent thinking of preschool children. Savoca conducted the study to investigate the role of reward, race,

socio-economic status, and Stanford Binet IQ scores as factors affecting the creative thinking capacity of young children. Sixteen groups of four-year-old children were given four tasks devised to obtain responses that could be scored for four divergent thinking factors isolated by Guilford. Those creative production factors were originality, figural flexibility, semantic flexibility, and fluency. Results determined that socio-economic level is an important factor for total divergent thinking, as the high socio-economic index groups scored significantly higher than the low socio-economic groups.

A review of literature concerning the effects of grade level on creativity reveals contradictory research results. Torrance (1967) has found that the overall trend is for scores on creativity subtests to increase from kindergarten through third grade, to decrease from third to fourth grade, and then to increase again slowly and consistently. Solomon (1974) concurs, the analysis of her findings indicating a peak in performance of disadvantaged children at the third grade level.

A general conclusion offered by Hillery (1969) is that in the case of his research, formal schooling has little, if any, direct positive effect on creative thinking. To determine whether or not formal school experience is a suppressant of creative development, Hillery designed a study to test several hypotheses related to the differential performance of two groups of elementary school children on tests of creative thinking. The two major sample groups were drawn from Freedom Schools in Prince Edward County, Virginia, and from public

elementary schools in Jackson, Michigan. The Virginia sample group consisted of four subgroups based on age and grade level, and arranged as follows: Grade 1 -- children who essentially had not missed any formal school experience, excepting kindergarten; Grade 4 -- children who had missed three years and were in their first year of school; Grade 6 -- children who had been in school one year, out four years, and in their second year of school; and Grade 8 -- children who had been in school three years, out four years, and in their fourth year of school. The Michigan sample group was subdivided as the Virginia group except that the Michigan children had had the normal number of years of school experience as implied by the grade level.

The measures of creative thinking used in this research study were the nonverbal tasks "Incomplete Figures" and "Circles", and the verbal tasks "Product Improvement" and "Unusual Uses", all four of which comprise Torrance's Minnesota Test of Creative Thinking, Abbreviated Form VII. The five scores which were generated were measures of fluency, flexibility, originality, elaboration, and total score. An analysis of variance design (2X2X4X4X2) was used to determine whether there were significant differences between the two groups on the four creativity measures.

Major results allowed the author to conclude that children who had normal school experience, in terms of number of years of continuous schooling, did better on tests of creativity than did those children whose schooling had been

interrupted or delayed. Differences between the two sample groups were neither large nor significant. There was no evidence that formal schooling had any positive effect on creative thinking, as measured by the tests Hillery utilized.

While Hillery found no direct positive link between formal schooling and creative thinking, Stoddard has strongly implicated formal education as a deterrent to creativity. He writes:

> Creativity came close to being a lost cause in American education ... Education, frequently viewed as an aggregation of facts or the preparatory stages of a prosaic life, carried on the scholastic tradition. The urge to inquire, to invent, to perform, was stifled in millions of school children ... (Stoddard, 1959, p. 181).

Studies into the effects of pre-primary educational experience upon creativity are few. Implicating the socialization processes of the preschool years, Keily writes, "It is possible that the root of lost creativity in education lies in the socialization processes of early childhood, particularly lack of stress on independence training" (Keily, 1974, pp. 8-9). Keily also draws upon Andrew's 1930 research and reports that surveys of nursery and preschool teachers showed an emphasis on the qualities of obedience, quietness, courtesy, and promptness, while traits associated with creative functioning, such as adventurousness, independence in judgment, curiosity, and risk-taking, were discouraged.

In a 1978 study of the effects of preschool on selected factors, Knox and Glover found preschool experience

to be of positive significance affecting both achievement test scores and readiness to learn measures. On the measure of creativity, however, no significant differences were obtained. For the study, 60 black and 60 white boys and girls in a rural area were randomly selected from the total population of first graders enrolled in normal classrooms. Children were identified as preschool attenders or non-attenders from school records.

All first graders in the school system had been administered the Stanford Achievement Test and the Analysis of Readiness Test by their classroom teachers. The Torrance Tests of Creative Thinking, Figural Form B, assessment was administered to the subjects as the measure of creativity. For purposes of the study, the four measures of fluency, flexibility, elaboration, and originality were combined to give a total creativity score. Two-way analyses of variance were computed over all three measures, with race and preschool experience as the independent variables. On the achievement test, white students obtained significantly higher scores than black students, and students with preschool experience scored significantly higher than children without preschool. On readiness to learn scores, no significant differences were obtained in terms of race, but children who had attended preschool significantly outperformed the non-attenders. On the measure of creativity, however, no significant differences were obtained by any factor. Knox and Glover responded to this finding by questioning whether the kinds of preschool

programs represented in their study emphasized the kinds of creative abilities measured by the Torrance tests.

The factor of sex as a determiner of creative functioning has been attended to in several studies. Westra (1978) explored the relationship of preschool settings to creative thinking, and reported no significant difference between the creativity of boys and girls. Solomon (1968) found that when significant relationships existed for socio-economic, grade, and age variables and creativity, test results favored females over males.

CHAPTER III

METHODS

Description of the Population

The population for the research consisted of 95 white Appalachian children, randomly selected from the total kindergarten, first grade, and second grade enrollments of two rural elementary public schools in a mountain county in northwestern North Carolina. All subjects selected were born in an Appalachian county, as defined by the Appalachian Regional Commission. The sample population was comprised of 46 females and 49 males; 31 of the subjects had had pre-primary educational experience prior to kindergarten, while 64 subjects had had no such experience. Of the 95 children who comprised the research sample, 42 were enrolled in kindergarten, 27 were enrolled in the first grade, and 26 were enrolled in the second grade. Initially, 96 subjects were selected and tested; however, one subject was unable to complete all segments of the assessment procedure, yielding an N of 95.

Instruments and Materials Used in the Research

The instruments chosen for the study were Thinking Creatively With Pictures, Figural Form B (TTCT, Figural Form B)

(Torrance, 1966), and Thinking Creatively in Action and Movement (TCAM) (Torrance, 1979), both developed by E. Paul Torrance for use in assessing creativity through primarily non-verbal means.

The TTCT, Figural Form B, normed for subjects in kindergarten through adulthood, consists of three subtests or activities. Activity 1, "picture completion," provides a blue, curved shape which is to be used to develop a single picture or story with a title. It is scored for originality (number of responses not eliminated as being the most common, as based on a tabulation of a national sample of 500 subjects), for title abstractness (evaluated on a scale ranging from zero to three according to the following criteria: 0 = class titles; 1 = simple descriptions; 2 = imaginative, descriptive titles; and 3 = abstract but appropriate titles), and for elaboration (imagination and exposition of detail beyond single, primary response). Activity 2, "picture completion," presents a set of 10 incomplete figures which are to be completed and titled. It is scored for fluency (number of figures completed), originality, title abstractness, elaboration, and resistance to closure (evaluated on a scale ranging from zero to two according to the following criteria: 0 = quick, direct closure of figure by straight or simple curved line or by color; 1 = closure, followed by detail added outside the enclosure; and 2 = closure is never completed or is completed by irregular lines which form part of the picture). Activity 3, "circles," is made up of one set of six circles

and one set of 30 circles which are to be used to generate drawing of pictures or objects. It is scored for fluency, originality, and elaboration. All three activities are evaluated further by means of a checklist of creative strengths. Those strengths are defined as: expression of feelings/emotions in drawings/titles; articulateness in telling story with drawings/titles; movement and action; expressiveness of titles and labels; combination of two or more incomplete figures; combination of two or more circles; unusual visual perspective; internal visual perspective; extending/breaking boundaries/ cutting holes in circles; humor in titles/captions/drawings; richness of imagery; colorfulness of imagery; and quickness of warmup.

The TCAM assessment, normed by age for children from three to eight years of age, consists of four subtests or activities. Both verbal and nonverbal responses are accepted for all activities. Activity 1, "how many ways?", asks for ways the child can show or tell for getting across the room. It is scored for fluency (number of different, relevant, adequate responses), and for originality (based primarily on the statistical infrequency of the response, as based on a tabulation from a normative sample of 500 subjects). Activity 2, "can you move like?", asks the child to assume each of six roles, in each case either being something or doing something. Each of the six demonstrations is scored on a scale from "one" for no movement to "five" for excellent movement, like the thing being portrayed. The total

of these scaled scores is reported as the imagination score. Activity 3, "what other ways?", asks the ways the child can show or tell for getting a paper cup into a waste basket. It is scored for fluency and originality. Activity 4, "what can you do with a paper cup?", asks for the things the child can do or describe doing with the paper cup. It is scored for fluency and originality.

Materials necessary for conducting the study were: one copy per child of TTCT, Figural Form B; crayons and pencils; one copy per child of TCAM; and a paper drinking cup for each child tested.

Procedures for Collection of Data

All arrangements for conducting the study, use of the instruments, selection of the sample population, collection of pre-primary educational experience data, administration, scoring, interpretation of the data, and reporting of the findings were conducted by the researcher.

In order to counterbalance test order influences, one-half of the subjects were given the TTCT, Figural Form B assessment first and the TCAM measure later, while for the other half of the sample, the order of assessments was reversed. In no case did a subject receive both assessments on the same day.

The tests were administered by the researcher as set forth in the administration manuals for the tests, except that instructions for the TTCT, Figural Form B were simplified as

needed. Streamlined Scoring and Interpretation of TTCT, Figural Form B was done according to the established criteria. Scoring of TCAM was done according to the Administration, Scoring, and Norms Manual for that instrument.

CHAPTER IV

RESULTS

The raw scores for the two creativity assessments have been grouped according to grade in school and are indicated as follows: Group 0 = kindergarten, Group 1 = first grade, and Group 2 = second grade. The range, mean, and standard deviation of each variable for each group and for the total group are presented in Table 1.

The level of total creativity for the three groups, as measured by TCAM, shows an increase in scores from kindergarten to first grade and a decrease in scores from first grade to second grade. This pattern holds true for the three subscores Fluency, Originality, and Imagination, and for the Total score. This finding is in contrast with the national norms, which show a steady increase for three variables from kindergarten through third grade (8-year-olds) and only a slight decrease from first grade to second grade on the Imagination subscore. In addition, for all three sample groups, Fluency, Originality, Imagination, and Total scores are consistently below the norms.

A similar pattern in scoring is exhibited by the sample's performance on TTCT, Figural Form B. Raw scores on variables Fluency, Originality, Elaboration, Resistance to Closure, Average, and Bonus, and the total Creativity Index

show a steady increase from kindergarten through second grade. Only the scores on Abstractness of Titles show a decrease from first grade to second grade. Norm group data is available for subscores Fluency, Originality, Abstractness of Titles, Elaboration, and Resistance to Closure, and all show an increase from kindergarten through second grade. For all three sample groups, scores on Fluency, Originality, and Abstractness of Titles were below norm group scores, while scores on Resistance to Closure were above the norm group scores. Sample group scores on the Elaboration variable were varied when compared to norms, since kindergarten scores equalled the norm, first grade scores fell below the norm, and second grade scores exceeded the norm.

Table 1

Ranges, Means, and Standard Deviations for All Variables

Variable	Statistic	Group 0	Group 1	Group 2	Total
Age in months	Range	67- 87	76- 99	92-102	67-102
	Mean	74.9	86.4	96.7	84.1
	SD	5.4	5.8	3.7	10.4
Sex	Range	1-2	1-2	1-2	1-2
	Mean	1.5	1.6	1.5	1.5
	SD	.5	.5	.5	.5
Preschool	Range	1-2	1-2	1-2	1-2
	Mean	1.7	1.7	1.6	1.7
	SD	.5	.5	.5	.5
TCAM					
Fluency	Range	9-100	6-144	11-112	6-144
	Mean	27.3	34.2	30.4	30.1
	SD	20.4	31.3	24.3	24.9

Table 1 (continued)

Variable	Statistic	Group 0	Group 1	Group 2	Total
Originality	Range	5-179	3-216	6-162	3-216
	Mean	30.5	35.9	33.3	32.8
	SD	37.2	51.2	39.3	41.7
Imagination	Range	10- 30	15- 30	13- 30	10- 30
	Mean	22.4	25.0	24.7	23.8
	SD	5.1	4.6	5.2	5.1
Total	Range	30-300	27-390	33-286	27-390
	Mean	80.2	95.0	88.4	86.7
	SD	57.0	83.5	63.6	66.8
TTCT-Figural Form B					
Fluency	Range	4- 25	11- 26	11- 38	4- 38
	Mean	13.2	16.6	17.4	15.3
	SD	3.9	3.6	6.0	4.8
Originality	Range	0- 17	2- 14	3- 30	0- 30
	Mean	5.2	8.6	8.8	7.2
	SD	3.7	3.1	5.7	4.5
Abstract Titles	Range	0- 6	0- 6	0- 4	0- 6
	Mean	.8	1.6	1.0	1.1
	SD	1.1	1.6	1.2	1.3
Elaboration	Range	3- 11	3- 12	4- 13	3- 13
	Mean	5.6	7.0	8.2	6.7
	SD	2.2	2.9	2.3	2.6
Resistance to Closure	Range	0- 20	6- 20	11- 20	0- 20
	Mean	11.5	15.2	15.7	13.7
	SD	5.5	3.8	2.4	4.7
Average	Range	32-152	54-132	70-178	32-178
	Mean	72.6	98.0	102.4	88.0
	SD	22.9	21.1	25.4	26.8
Bonus	Range	0- 7	0- 11	3- 13	0- 13
	Mean	3.2	5.1	6.9	4.7
	SD	2.0	3.1	2.5	2.9
Creativity Index	Range	38-202	64-242	100-284	38-284
	Mean	104.2	148.7	171.6	135.3
	SD	37.4	49.1	43.5	51.3

Sex Differences on Thinking Creatively in Action and Movement Total Score and Thinking Creatively With Pictures, Figural Form B Creativity Index

The results of TCAM and of TTCT, Figural Form B were analyzed to determine if there was a difference in performance by sex on the two creativity assessments. Mean scores were computed by sex on the Total Score and the Creativity Index, and t-tests were performed to determine the statistical significance of the differences between mean scores (see Table 2). There were no statistically significant differences found between female and male subjects on either of the creativity assessments, clearly supporting Hypotheses 4 and 5. These results allowed for cross-sex grouping of the data for all subsequent analyses.

Table 2

Sex Differences on Creativity Assessment Total Scores

Sex	N	Mean	Difference of Means	t-value
Thinking Creatively With Pictures, Figural Form B Creativity Index Score				
Female	46	13.70	0.32	(pooled variance) 0.31(N.S.)
Male	49	13.38		
Thinking Creatively in Action and Movement Total Score				
Female	46	79.02	-14.84	(separate variance) -1.10(N.S.)
Male	49	93.86		

Correlations Among the Variables

Correlation coefficients between the four TCAM subscores and the eight TTCT, Figural Form B subscores were computed with age of the subjects partialled out. Computations were controlled for age in order that the pure relationship between the variables be more clearly evident. The results of the correlational analyses for the twelve creativity subscores are presented in Table 3 (see page 27).

As expected, most subscores on each creativity assessment correlate significantly and positively with subscores on the other assessment. However, three interesting exceptions must be noted. The Imagination variable on TCAM does not correlate significantly with any of the eight subscores on TTCT, Figural Form B. Likewise, neither Abstractness of Titles nor Resistance to Closure subscores correlate significantly with any of the three TCAM independent variables or the TCAM Total score. The lack of correlation between Imagination, meaning, in this case, the ability to assume the role of various animate and inanimate objects and to behave accordingly, and the TTCT, Figural Form B assessment scores indicates that the Imagination variable on TCAM probably has no congruent measure on the TTCT, Figural Form B assessment. Similarly, Abstractness of Titles and Resistance to Closure show no relationship to the creative qualities measured by TCAM subscores or Total score.

The strongest significant positive correlation between any of the variables occurs between the TCAM Total

Table 3

Correlation Coefficients Between Scores on *Thinking Creatively With Pictures, Figural Form B*, and *Thinking Creatively in Action and Movement*, With Age Partialled Out

	Thinking Creatively With Pictures, Figural Form B scores							
Thinking Creatively in Action and Movement scores	fluency	originality	abstract titles	elaboration	resistance to closure	average	bonus	creativity index
fluency	0.27**	0.24**	0.15	0.32***	0.14	0.33***	0.29**	0.34***
originality	0.27**	0.23*	0.14	0.30***	0.13	0.32***	0.31***	0.35***
imagination	0.03	0.06	-0.03	0.11	0.06	0.08	0.07	0.08
total	0.28**	0.24**	0.14	0.32***	0.14	0.32***	0.31***	0.35***

*Significant at $p \leq .05$ (2-tailed test)
**Significant at $p \leq .01$ (2-tailed test)
***Significant at $p \leq .001$ (2-tailed test)

score and the TTCT, Figural Form B Creativity Index, also a total score. Thus, it may be seen that these two creativity assessments succeed at measuring the same thing, creativity, in different ways: through both non-verbal and verbal expression, and figural, pictoral expression.

Of thirty-two correlations, eighteen are significant. These range from .23 to .36. The fourteen non-significant correlations range from -.04 to .16. For the most part, then, significant correlations exist between subscores of the two assessments, with the strongest relationship occurring between the total scores. Hypothesis 1 is therefore refuted.

Relationships of Variables with Age

All relationships discussed above are derived from statistical computations controlled for age. In order to determine the relationship of age to the fourteen creativity variables of TCAM and TTCT, Figural Form B, Pearson correlation coefficients were obtained. The analysis yielded significant positive correlations of age with TTCT, Figural Form B subscores Fluency ($r = .37$, $p < .001$), Originality ($r = .35$, $p < .001$), Elaboration ($r = .36$, $p < .001$), Resistance to Closure ($r = .41$, $p < .001$), Average ($r = .48$, $p < .001$), Bonus ($r = .47$, $p < .001$), and the Creativity Index ($r = .52$, $p < .001$). Only the subscore Abstractness of Titles failed to correlate significantly with age, possibly because of the low rate of response obtained on that part of the task. Most of the responses obtained were given hesitantly, and subjects

were much more interested in attending to the finer aspects of figural expression. Thus, when titles were given by subjects to their drawings, the titles tended to be quickly assigned and of a concrete, labeling nature. For this reason, and due to the fact that all other variables on the TTCT, Figural Form B assessment correlated with age, Hypothesis 2 is strongly disproved.

In contrast, the analysis yielded no significant correlations between age and the TCAM variables Fluency, Originality, or Total; age did correlate significantly with the Imagination variable ($r=.26$, $p<.01$). The Imagination variable differs from all other subscores of both the TCAM and the TTCT, Figural Form B in that the subscore for that variable is based entirely on responses to six tasks involving role-taking. To respond, a child must imagine various animate and inanimate objects as asked for by the administrator, and then act or move as he or she imagines the role elicits. It is obvious that the kind of creative thinking demanded to respond to this task is unlike the thinking necessary to complete the other tasks on TCAM, and it appears that the creative processes involved in imaginative role-taking are cultivated as one ages. Thus, the analysis supports Hypothesis 3 that there will be no significant difference between age of subjects and scores on TCAM.

Since age of subjects did correlate significantly with all but one of the TTCT, Figural Form B variables, it can be inferred that age is a factor which enhances a child's

ability to express his or her figural creativity. Creativity, as measured by TCAM, does not seem to be affected by age, however, perhaps indicating that the types of creative functioning assessed by most tasks on TCAM are not enhanced by age at the upper end of the instrument's age range. It may be that such non-verbal movement-oriented expressions of creativity, as those elicited through the administration of TCAM, are already established in the young child by the age of five, the youngest age to which the assessment was administered during this research.

Pre-primary Education Differences on TTCT, Figural Form B Creativity Index and TCAM Total Score

The results of TTCT, Figural Form B and of TCAM were analyzed to determine if there was a difference in performance on the two creativity assessments based on pre-primary educational experience. Mean scores on the Creativity Index and the Total score were computed for subjects with pre-primary educational experience and for those without such experience, and t-tests were performed to determine the statistical significance of the differences between the mean scores (see Table 4). There were no statistically significant differences found between those subjects with pre-primary educational experience and those without, clearly supporting Hypotheses 6 and 7.

This finding is particularly interesting in view of the fact that pre-primary educational experience is often

thought to give the young child an advantage which will manifest itself later, when the child enters school. Indeed, it may well be that such experience does contribute to a child's intellectual, social, and emotional functioning. The research shows that sample children with pre-primary educational experience do score higher on the two measures of creative expression than do those sample children without that experience, but that the difference is not a significant one. These results suggest that the types of pre-primary educational experience which the subjects have been exposed to have not fostered a growth in creativity.

Table 4

Pre-primary Education Differences on Creativity Assessment Total Scores

Pre-primary educational experience	N	Mean	Difference of Means	t-value
Thinking Creatively With Pictures, Figural Form B Creativity Index Score				
Yes	31	14.97	2.13	(pooled variance) 1.93 (N.S.)
No	64	12.84		
Thinking Creatively in Action and Movement Total Score				
Yes	31	105.23	27.54	(separate variance) 1.58 (N.S.)
No	64	77.69		

Relationships of Variables with Grade Level in Public School

Pearson correlation coefficients were obtained to determine the relationship of grade level in public school to the fourteen creativity variables of TCAM and TTCT, Figural Form B. The analysis yielded significantly positive correlations of grade level in public school with the TTCT, Figural Form B variables Fluency ($r=.38$, $p<.001$), Originality ($r=.36$, $p<.001$), Elaboration ($r=.42$, $p<.001$), Resistance to Closure ($r=.39$, $p<.001$), Average ($r=.49$, $p<.001$), Bonus ($r=.54$, $p<.001$), and the Creativity Index ($r=.56$, $p<.001$). Only the variable Abstractness of Titles failed to correlate significantly with grade level. The strongest correlation existed between the Creativity Index, the total score measure attained on the TTCT, Figural Form B assessment, and grade level. Therefore, Hypothesis 8 is disproved.

While thirteen of the fourteen TTCT, Figural Form B variables correlate significantly with grade level, only one of the four TCAM variables is significantly correlated with grade. A very low significant correlation occurs between the Imagination variable of TCAM and grade level ($r=.20$, $p<.05$). The three non-significant correlations range from .03 to .06. Hypothesis 9 is therefore supported by the analysis.

The implication from the analyses of correlations between the creativity assessments and subjects' grade level in public school is that the public school experiences of the sample have allowed for the development of creativity as

measured by TTCT, Figural Form B. The types of creative expression measured by TCAM, however, do not seem to have been enhanced by public school experiences.

Comparison of Subjects' Scores and Norm Group Scores

Scores on the TTCT, Figural Form B and the TCAM were compared with norm group scores. The TTCT, Figural Form B were by grade and the TCAM were by age because of the different norming procedures used on the two instruments.

In order to determine the significance of difference between subjects' scores and norm group scores, by grade, on TTCT, Figural Form B, z-tests were computed. The results of the z-tests for significance are presented in Table 5.

Table 5

Results of z-Tests for Significance Between Kindergarten, First Grade, and Second Grade Subjects' Scores and Norm Group Scores on Thinking Creatively With Pictures, Figural Form B

	Kindergarten (N=42)	First Grade (N=27)	Second Grade (N=26)
Fluency	-3.44***	-2.02*	-1.73
Originality	-5.36***	-2.47*	-2.56*
Abstractness of Titles	-3.13**	-1.80	-3.86***
Elaboration	0	-0.43	0.89
Resistance to Closure	6.62***	6.63***	6.95***

*p ≤ .05 (two-tailed test)
**p ≤ .01 (two-tailed test)
***p ≤ .001 (two-tailed test)

Kindergarten subjects scored significantly below the norm on TTCT, Figural Form B variables Fluency, Originality, and Abstractness of Titles. There was no difference in mean scores on the Elaboration variable; kindergartners scored significantly above the norm on the Resistance to Closure variable. First grade subjects scored below the norm on four of five TTCT, Figural Form B variables, although the differences were significant only for Fluency and Originality. First graders scored significantly above the norm on Resistance to Closure. Second grade subjects scored significantly below the norm on two variables, Originality and Abstractness of Titles. As did the kindergartners and first graders, second grade subjects scored significantly above the norm on Resistance to Closure. The results indicate that significant differences exist between sample and norm group scores for ten of the fifteen z-tests. Hypothesis 10 is not supported by the statistical analyses.

All three sample groups scored above the norm on one variable, Resistance to Closure. It is possible that sample children scored higher on this variable due to the fact that a majority of responses on the "incomplete figures" task were of an abstract nature. These abstract responses tended to avoid immediate closure, generating high Resistance to Closure scores, while at the same time generating low Originality scores.

If the three correlations concerning Resistance to Closure are discounted, then ten of twelve correlations

between grade level and scores on TTCT, Figural Form B are negative, and seven are significantly so. It appears, then, that sample children performed consistently below norm groups on figural creativity, as measured by TTCT, Figural Form B.

z-tests were also computed to determine the significance between subjects' scores and norm group scores, by age, on TCAM. The results of these z-tests for significance are presented in Table 6.

Table 6

Results of z-Tests for Significance Between 5-, 6-, 7-, and 8-year-old Subjects' Scores and Norm Group Scores on Thinking Creatively In Action and Movement

	5-year-olds (N=13)	6-year-olds (N=35)	7-year-olds (N=30)	8-year-olds (N=17)
Fluency	0.50	-2.17*	-2.27*	-1.88
Originality	0.42	-2.21*	-1.49	-2.84**
Imagination	0.41	-0.86	2.50*	-0.60
Total	0.54	-2.07*	-1.43	-2.50*

*$p \leq .05$ (two-tailed test)
**$p \leq .01$ (two-tailed test)

No statistically significant differences were found between five-year-old subjects' scores and norm group scores. Six-year-old subjects, however, scored below the norm on all four TCAM variables. The differences were significant for variables Fluency, Originality, and Total. Seven-year-olds

scored below the norm on three TCAM variables, significantly so on Fluency, but scored significantly above the norm on the Imagination variable. Eight-year-old subjects scored below the norm on all four variables. Differences were significant for Originality and Total score.

The results show that significant differences exist between subjects' and norm group scores for seven of sixteen z-tests and Hypothesis 11 is refuted by the statistical analysis.

It is interesting to note that five-year-old subjects scored above the norm on all four TCAM variables, while six-, seven-, and eight-year-old subjects scored below the norm on eleven of twelve variables. Clearly, sample five-year-olds can be considered about average with five-year-olds, in general, on creativity as measured by TCAM. Sample six-year-olds, seven-year-olds, and eight-year-olds do not perform as well on TCAM tasks as do norm group children of the same age, however. It may be that sample five-year-olds perform as well on TCAM as do norm group five-year-olds because they are more likely to be spontaneous in responding through action and movement activities. A more probable explanation is that five-year-old sample children have been less influenced or inhibited by school experiences, environmental factors, or a combination, because they have been in school and/or in the environment for a shorter time than have the six-, seven-, and eight-year-old sample children.

CHAPTER V

DISCUSSION

Summary

This study assessed the creative abilities of children from rural Appalachia, and examined the effects on creativity of years in public school, pre-primary educational experience, and sex of the subjects. The 95 subjects were all students in kindergarten, first grade, or second grade enrolled in rural public schools in a mountain county in northwestern North Carolina. For assessment purposes, the subjects were grouped according to grade in public school and according to age. Kindergarten, first grade, and second grade groups were balanced for sex.

The instruments used were Thinking Creatively With Pictures, Figural Form B (TTCT, Figural Form B), administered according to the manual and scored using Streamlined Scoring and Interpretation, and Thinking Creatively in Action and Movement (TCAM), given and scored according to directions outlined in the manual.

The purpose of the study was to test the following hypotheses:

1. There will be no significant correlation between the subjects' scores on Thinking Creatively With

Pictures, Figural Form B, and Thinking Creatively in Action and Movement, with age partialled out.

2. There will be no significant difference based upon the age in months of subjects on scores on Thinking Creatively With Pictures, Figural Form B.
3. There will be no significant difference based upon the age in months of subjects on scores on Thinking Creatively in Action and Movement.
4. There will be no significant difference based upon sex on scores on Thinking Creatively With Pictures, Figural Form B.
5. There will be no significant difference based upon sex on scores on Thinking Creatively in Action and Movement.
6. There will be no significant difference, based upon pre-primary educational experience, in scores on Thinking Creatively With Pictures, Figural Form B.
7. There will be no significant difference, based upon pre-primary educational experience, in scores on Thinking Creatively in Action and Movement.
8. There will be no significant difference based upon subjects' grade level in public school on scores on Thinking Creatively With Pictures, Figural Form B.

9. There will be no significant difference based upon subjects' grade level in public school on scores on Thinking Creatively in Action and Movement.
10. There will be no significant difference between subjects' scores and norm group scores on Thinking Creatively With Pictures, Figural Form B.
11. There will be no significant difference between subjects' scores and norm group scores on Thinking Creatively in Action and Movement.

Analyses of the data were as noted below. Ranges, means, and standard deviations were computed for all variables by group and for the total sample. The TTCT, Figural Form B and the TCAM assessments were analyzed for sex differences in performance using a difference of means test with a two-tailed t-test for significance. Partial correlations controlling for age were computed for the TTCT, Figural Form B with the TCAM. A Pearson-r correlational analysis was used to determine if correlations between subscores and total score were significant. Pearson correlation coefficients were obtained to determine the relationship of age to the TTCT, Figural Form B and TCAM variables. The TTCT, Figural Form B and the TCAM assessments were analyzed for pre-primary education differences using a difference of means test with a two-tailed t-test for significance. Pearson correlation coefficients were obtained to determine the relationship of grade level in

public school to the TTCT, Figural Form B and TCAM variables. To determine the significance of difference between subjects' scores and norm group scores on TTCT, Figural Form B and TCAM, difference of means tests, with z-tests for significance, were used.

The score distribution on TTCT, Figural Form B conformed to expectations. There was an overall increase in figural creativity, as measured by the assessment. The score distribution on TCAM did not conform to expectations, however. The level of creativity, as measured by that assessment, increased from kindergarten to first grade and decreased from first grade to second grade.

Of the 32 correlations between TTCT, Figural Form B and TCAM variables, one was significant at the .05 level, eleven were significant at the .01 level, and six were significant at the .001 level. The strongest significant positive correlation existed between the total scores, and Hypothesis 1 was rejected.

There were significant positive correlations of age with six of seven TTCT, Figural Form B subscores, plus the Creativity Index total score, and Hypothesis 2 was rejected. There were no significant correlations between age and three of four TCAM variables, including the Total score, and Hypothesis 3 was not rejected. There were no significant differences due to sex of subjects on TTCT, Figural Form B or on TCAM, and Hypotheses 4 and 5 were supported. Likewise, there were no significant differences based on pre-primary

educational experience on TTCT, Figural Form B or on TCAM, and Hypotheses 6 and 7 were supported.

There were significant positive correlations between grade level in public school and six of seven TTCT, Figural Form B subscores and the Creativity Index score, and Hypothesis 8 was rejected. However, there were no significant correlations between grade level in public school and three of four TCAM variables, including the Total score, and Hypothesis 9 was not rejected.

There were significant differences between sample scores and norm group scores on TTCT, Figural Form B for ten of fifteen z-tests, and Hypothesis 10 was rejected. Similarly, significant differences existed between sample scores and norm group scores on TCAM for seven of sixteen correlations, and Hypothesis 11 was not supported.

Discussion

The results must be kept within the perspective of the educational environment in which the study took place. The restricted population of rural Appalachian children was used in this study; therefore, the findings of the study are limited and applicable only to populations similarly defined.

The intercorrelations of the TCAM variables and the TTCT, Figural Form B variables contained several noteworthy or unanticipated results. The lack of significant positive relationships between the Imagination variable on TCAM and any of the seven subscores and the total score on TTCT,

Figural Form B seems to indicate that, for the sample, the Imagination variable on TCAM probably has no congruent measure on TTCT, Figural Form B. This is implicit in the designs of the two instruments. Imagination, as assessed by TCAM, means the ability to assume the role of various animate and inanimate objects and to behave accordingly. TTCT, Figural Form B, designed for figural, pictoral responses, allows for no such imaginative expression.

The failure of TTCT, Figural Form B variables Abstractness of Titles and Resistance to Closure to correlate significantly with any of the TCAM variables is more difficult to explain. It is possible that Abstractness of Titles failed to correlate significantly with TCAM variables due to the low rate of responding to that part of the task. Also, when responses were given, they were offered reluctantly and tended to be of a concrete, labeling nature. The lack of significant correlation between Resistance to Closure and the TCAM variables may be due, in part, to the fact that a majority of responses on the "incomplete figures" task were of an abstract nature. These abstract responses tended to avoid immediate closure, generating high Resistance to Closure scores, while at the same time generating low scores on Originality, one of the three creative qualities assessed by TCAM.

For the most part, significant positive correlations did exist between the TCAM variables and the TTCT, Figural Form B variables. This finding, along with the fact that

the strongest relationship occurred between the total scores of the two instruments, supported the expectation that the two assessments would succeed at measuring the same thing, creativity. However, it is clear that the spectrum of attributes of creativity assessed by the two instruments when used in conjunction is broader than the spectrum assessed by either of the instruments when used alone.

Both instruments yielded unanticipated patterns in their ranges, means, and standard deviations, showing a decrease in scores or a failure to increase as substantially as would be expected over the three groups. In addition, sample scores were below norm group scores for most subscores of both instruments. The level of total creativity for the sample, as measured by TCAM, showed an increase in scores from kindergarten to first grade and a decrease in scores from first grade to second grade. This pattern held for the four variables of the instrument. In contrast, national norms showed a steady increase for three variables from kindergarten through third grade, and only a slight decrease from first grade to second grade on the Imagination subscore. It seems probable that the particular educational environment in which the study took place was responsible to some extent for the unusual scoring pattern of the sample. It may be postulated that the types of activities offered to sample children in kindergarten were of a nature similar to the activities called for in responding to TCAM. For example, kindergarten classrooms were arranged to allow for much

movement through the physical environment. Block play, creative dramatics, and housekeeping areas all enhanced creative play through action and movement. Physical manipulation of the learning environment was an integral part of the kindergarten school day. Some of these activities and opportunities were carried over to first grade, but were gradually eliminated from the school environment as the school year progressed. By second grade, learning was much more structured and opportunities for action and movement were limited. Thus, kindergartners were responding to the TCAM tasks much as they played and learned in daily activities. The tasks were not foreign and were more game-like for the kindergartners, becoming less so for first graders. Second grade sample children were likely to have been even less familiar with the types of responding called for on TCAM tasks. These factors apparently played a significant part in the fact that sample children's scores increased from kindergarten to first grade and then decreased from first grade to second grade on the TCAM assessment.

A similar pattern in scoring was noted for sample children's performance on TTCT, Figural Form B subscore Abstractness of Titles. The decrease in scores of the sample on this variable may have been due to the low rate of response to this part of the task and to the tendency of subjects to simply label a figure rather than to assign an abstract title to it. Sample scores on all other TTCT, Figural Form B tasks showed a steady increase from kindergarten through second

grade, in keeping with the pattern exhibited by national norm groups. It may be inferred that the educational environment played a role in contributing to the sample's ability to increase in scoring on the TTCT, Figural Form B tasks from kindergarten through second grade. The educational environment was observed to increase in structure from kindergarten to second grade. While kindergartners were allowed more movement and mobility, first and second graders had less opportunity for such activity, gradually being expected to accomplish more class work while seated at desks. Much of the "seat work" assigned to children in the first and second grades consisted of mimeographed sheets, which presented subject material as tasks to be completed by the children working alone and with no other learning materials. In many cases, pictoral directions and examples were given, from which children were required to determine the correct responses to "complete" the work. Thus, the types of responding called for by the TTCT, Figural Form B instrument were more familiar to subjects as they progressed through the early grades. For this reason, scores on TTCT, Figural Form B were probably affected, showing steady increases from kindergarten to second grade.

As mentioned above, sample scores on TCAM and on TTCT, Figural Form B were generally below norm group scores. An obvious interpretation of these results is that sample children exhibited less creative ability, in keeping with other diminished abilities ascribed to the Appalachian

subculture of poverty. It may be that Appalachian cultural influences have not offered experiences which would allow sample children to do as well on the instruments as mainstream American children. The types of creative functioning which sample children may possess may not have been tapped through the assessments used in the study. In addition, educational, social, and familial influences on sample children's performances are not known.

A second interpretation as to the reason sample scores fell below norm group scores implicates the educational environment of the sample. It is possible that the schooling of sample children has not included enough of the types of experiences in figural, pictoral expression, such as required for responding to TTCT, Figural Form B tasks. Sample kindergartners scored more significantly below the norm than did sample first and second graders on TTCT, Figural Form B subscores Fluency and Originality, apparently indicating that educational experiences fostering these creative qualities were less in evidence in sample kindergarten classrooms than in first and second grade classes.

Sample scores on TCAM more clearly implicated the educational setting as deficient in fostering verbal and non-verbal creative expression. Sample five-year-olds performed as well as norm group five-year-olds on all variables of the TCAM assessment. Six-, seven-, and eight-year-old sample children scored consistently below national norms, however. It seems probable that creative spontaneity may be

a part of the five-year-old's inherent make-up, which is fostered through action and movement kindergarten activities but squelched through the structured activities of later grades. The educational setting in which the study took place failed, then, in allowing for the continuation or growth of types of creativity measured by TCAM.

Another interesting facet of the results of this study is the relationship of the TTCT, Figural Form B and TCAM variables to the factors of age and grade level in public school, and the influences of pre-primary educational experiences on sample scores. Both age of subjects and grade level correlated significantly and positively with six of the seven subscores and the Creativity Index of TTCT, Figural Form B. Thus, it can be inferred that age and grade level contributed to the ability of sample children to perform on tasks of figural creative expression, as measured by TTCT, Figural Form B. Surprisingly different results were found in sample children's responding to TCAM, however. Only the TCAM variable Imagination correlated with age or grade level of subjects, and those correlations were very low. If neither age nor grade level influenced scores on TCAM, then some other factor(s) must have been involved which determined subjects' abilities to express creativity through action and movement. It is not surprising that particular experiences in subjects' educational environment must have been involved. Interestingly, it seems that those same educational experiences which have fostered figural creativity, as measured by TTCT, Figural

Form B, are the experiences which have interferred with the expression of creative ability through verbal and non-verbal means, as measured by TCAM. Whatever the relationship of age and grade level in public school to TTCT, Figural Form B and TCAM variables, the factor of pre-primary educational experience has not significantly altered it, as evidenced by the non-significant differences.

The findings of this study indicate that the rural Appalachian educational environment in which the study took place is responsible to some extent for the failure of sample children to score as anticipated on the measures of creativity. It is important to note, however, that the results of the study do not preclude the existence of factors such as home experiences, family situations, and socio-economic conditions, whose influences on the findings of the study are not known.

Conclusions and Recommendations for Further Research

There was a high level of correlation among TTCT, Figural Form B variables and TCAM variables, indicating that the two instruments succeeded at measuring creativity through different means.

Scoring patterns on both assessments showed either a decrease in scores or a failure to increase as would have been expected. Sample scores were below the norm group scores for most subscores on both instruments. The particular educational environment in which the study took place was implicated, in large part, for these unanticipated results.

The factors of age and grade level correlated with scores on TTCT, Figural Form B but did not correlate significantly with scores on TCAM.

The incidence of pre-primary educational experience had some influence on sample scores on both instruments, but the differences were not significant ones.

The following are recommendations for additional research:

1. The study should be replicated, including third and fourth grade subjects, to determine if the decrease in scores on TCAM from first to second grade continues;
2. There should be research conducted to determine the effects of socio-economic status on scores on the two instruments;
3. The study should be replicated with a sample from urban Appalachia;
4. Correlate studies should be conducted in non-Appalachian settings; and
5. There should be research done on the relationship between specific educational environments and creativity.

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VITA

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